Claims

What is claimed is:

1. A cardiac catheter for measuring differential pressure between a left ventricle and an aorta across an aortic valve for diagnosis of aortic stenosis, the catheter comprising:

a manifold portion including a first connector and a second connector;

a coaxial dual lumen portion comprising an inner lumen wall defining an inner lumen in operable fluid communication with the first connector and an outer lumen wall defining an annular outer lumen in operable fluid communication with the second connector, and coaxial with the inner lumen, the outer lumen wall being perforated by at least one outer lumen side hole proximate a distal end thereof;

the single lumen portion in fluid communication with the inner lumen of the dual lumen portion and including at least a first generally straight portion, the single lumen portion being perforated by at least one inner lumen side hole; and

a pigtail portion distal to the first generally straight portion.

2. The cardiac catheter as claimed in claim 1, further comprising a tapered portion interposed between the dual lumen portion and the single lumen portion.

3. The cardiac catheter as claimed in claim 1, wherein the dual lumen portion has a diameter of greater than six French and the single lumen portion has a diameter less than or equal to six French.

4. The cardiac catheter as claimed in claim 3, wherein the dual lumen portion has a diameter of between about seven French and about eight French.

5. The cardiac catheter as claimed in claim 3, wherein the single lumen portion has a diameter of about five French.

6. The cardiac catheter as claimed in claim 1, wherein the inner lumen side holes are distributed in a spiral pattern over a section of the single lumen portion about two centimeters in length.

7. The cardiac catheter as claimed in claim 1, wherein the outer lumen side holes are distributed over a section of the dual lumen portion about four centimeters in length.

8. The cardiac catheter as claimed in claim 1, wherein the single lumen portion further comprises a second generally straight portion joined by a bend to the first generally straight portion.

9. The cardiac catheter as claimed in claim 8, wherein an angle formed by the bend between the first generally straight portion and the second generally straight portion is between about one hundred thirty degrees and one hundred sixty degrees.

10. The cardiac catheter of claim 9 wherein the angle is about one hundred forty-five degrees.

11. The cardiac catheter as claimed in claim 1, wherein the outer lumen wall comprises thin wall extrusion technology.

12. The cardiac catheter as claimed in claim 1, wherein the inner lumen wall comprises braided extrusion technology whereby high-pressure injections are accommodated.

13. A method of measuring differential pressure between a left ventricle and an aorta across an aortic valve for diagnosis of aortic stenosis, the method comprising the steps of:

creating a percutaneous access to a major artery in a human body;

inserting a guidewire into the blood vessel and guiding the guidewire through an aorta and into the left ventricle of the heart;

inserting a coaxial dual lumen pigtail catheter along the guidewire until a pigtail portion of the catheter is positioned in the left ventricle;

withdrawing the guidewire from the catheter;

operably connecting a pressure measuring device in fluid communication with a first lumen and a second lumen of the catheter, the first lumen being in fluid communication with the left ventricle and the second lumen being in fluid communication with the aorta;

obtaining simultaneous pressures from both the aorta and the left ventricle; and

determining a diagnostic pressure gradient across the valve by comparing the pressure in the ventricle and the aorta.

14. The method as claimed in claim 13, in which the determination of the diagnostic pressure gradient further comprises the step of determining the diagnostic pressure gradient across the valve by comparing systolic peaks in the ventricle and the aorta.

15. A method of manufacturing a coaxial dual lumen pigtail catheter, comprising the steps of:

forming a manifold portion including a first connector and a second connector;

connecting a dual lumen portion comprising an inner lumen wall defining an inner lumen in operable fluid communication with the first connector;

connecting an outer lumen wall defining an annular outer lumen in operable fluid communication with the second connector, and coaxial with the inner lumen;

perforating the outer lumen wall with a at least one outer lumen side hole proximate a distal end thereof;

connecting a single lumen portion comprising a first generally straight portion to the dual lumen portion;

perforating the single lumen portion with at least one inner lumen side hole proximate a distal end of the single lumen portion; and

forming a pigtail portion on the single lumen portion distal to the first generally straight portion.

16. The method as claimed in claim 15, further comprising the step of tapering a portion of the catheter between the dual lumen portion and the single lumen portion.

17. The method as claimed in claim 15, further comprising the step of distributing the inner lumen side holes in a generally spiral pattern over a section of the single lumen portion about two centimeters in length.

18. The method as claimed in claim 15, further comprising the step of distributing the outer lumen side holes over a section of the dual lumen portion about four centimeters in length.

19. The method as claimed in claim 15, further comprising the steps of forming a second generally straight portion adjacent the first generally straight portion and joined thereto by a bend and forming a bend angle to be between about one hundred thirty degrees and one hundred sixty degrees.

20. The method as claimed in claim 15, further comprising the step of forming the bend angle to be about one hundred forty five degrees.

21. The method as claimed in claim 15, further comprising the step of forming the outer lumen wall using thin wall extrusion technology.

22. The method as claimed in claim 15, further comprising the step of forming the inner lumen wall using braided extrusion technology to accommodate high-pressure injections at a pressure of at least about twelve hundred pounds per square inch.